

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings of claims in the application:



1. (Previously Presented) An electrophotographic photoconductor, comprising:
 - an electroconductive substrate;
 - a charge generation layer; and
 - a charge transport layer formed by using a halogen-free solvent, arranged in

this order,

wherein the charge generation layer comprises:

a charge generation material in the form of particles having an average particle diameter smaller than a surface roughness of a plane where the charge generation layer is arranged; and

a polyvinyl acetal resin having a ratio M_w/M_n of a weight-average molecular weight M_w to a number-average molecular weight M_n is 2.2 or more; and

wherein the charge transport layer comprises polycarbonate having a triarylamine structure in at least one of principal chain and side chain thereof.

2. (Previously Presented) The electrophotographic photoconductor according to Claim 1, wherein the plane where the charge generation layer is arranged is a surface of the electroconductive substrate.

3. (Previously Presented) The electrophotographic photoconductor according to Claim 1, further comprising an interlayer disposed between the electroconductive

substrate and the charge generation layer, wherein the plane where the charge generation layer is arranged, is a surface of the interlayer.

4. (Previously Presented) The electrophotographic photoconductor according to Claim 1, wherein the average particle diameter of the charge generation material is $0.3\text{ }\mu\text{m}$ or less and is two-thirds or less of the surface roughness of a plane where the charge generation layer is arranged, and wherein the polyvinyl acetal resin has a number-average molecular weight M_n in terms of polystyrene of 100,000 or more.

5. (Previously Presented) The electrophotographic photoconductor according to Claim 1, wherein the charge generation material is a titanyl phthalocyanine.

6. (Previously Presented) The electrophotographic photoconductor according to Claim 5, wherein the titanyl phthalocyanine shows a maximum diffraction peak at $27.2\pm 0.2^\circ$ in terms of Bragg 2θ angle to the CuK- α characteristic X-ray wavelength at 0.1542 nm.

7. (Previously Presented) The electrophotographic photoconductor according to Claim 6, wherein the titanyl phthalocyanine shows a maximum diffraction peak at $27.2\pm 0.2^\circ$ and a peak as a lowest-angle peak at $7.3\pm 0.2^\circ$ and shows no peak in a range between 7.4° and 9.4° in terms of Bragg 2θ angle to the CuK- α characteristic X-ray wavelength at 0.1542 nm.

8. (Previously Presented) The electrophotographic photoconductor according to Claim 7, wherein the titanyl phthalocyanine shows no peak at 26.3° in terms of Bragg 2θ angle to the CuK- α characteristic X-ray wavelength at 0.1542 nm.

9. (Previously Presented) The electrophotographic photoconductor according to Claim 5, wherein the charge generation layer is formed by a process comprising:

dispersing particles of the titanyl phthalocyanine so as to have an average particle diameter of 0.3 μm or less with a standard deviation of 0.2 μm or less, to yield a dispersion;

filtering the dispersion through a filter having an effective pore size of 3 μm or less; and

applying the filtered dispersion to form the charge generation layer.

10. (Previously Presented) The electrophotographic photoconductor according to Claim 5, wherein the titanyl phthalocyanine is prepared by the process comprising:

subjecting an amorphous titanyl phthalocyanine or low-crystallinity titanyl phthalocyanine to crystal transformation using an organic solvent in the presence of water, the amorphous titanyl phthalocyanine or low-crystallinity titanyl phthalocyanine showing a maximum diffraction peak ($\pm 0.2^\circ$) at least at 7.0° to 7.5° with a half width of 1° or more in terms of Bragg 2θ angle to the CuK- α characteristic X-ray wavelength at 0.1542 nm and having an average primary particle diameter of 0.1 μm or less; and

fractionating and filtering the crystal-transformed titanyl phthalocyanine from the organic solvent before the transformed crystals of the titanyl phthalocyanine grow to have an average primary particle diameter more than 0.3 μm .

11. (Canceled)

12. (Currently Amended) The electrophotographic photoconductor according to Claim 1, further comprising a surface protective layer on ~~or above~~ the charge transport layer.

13. (Previously Presented) The electrophotographic photoconductor according to Claim 12, wherein the surface protective layer comprises at least one of an inorganic pigment and a metal oxide each having a specific resistance of $10^{10} \Omega\cdot\text{cm}$ or more.

14. (Previously Presented) The electrophotographic photoconductor according to Claim 13, wherein the metal oxide is at least one member selected from the group consisting of alumina, titanium oxide and silica, each having a specific resistance of $10^{10} \Omega\cdot\text{cm}$ or more.

15. (Previously Presented) The electrophotographic photoconductor according to Claim 14, wherein the metal oxide is α -alumina having a specific resistance of $10^{10} \Omega\cdot\text{cm}$ or more.

16. (Previously Presented) The electrophotographic photoconductor according to Claim 12, wherein the surface protective layer comprises a polymeric charge transport material.

17. (Previously Presented) The electrophotographic photoconductor according to Claim 1, wherein the electroconductive substrate has an anodic oxidation coating on the surface thereof.

18. (Previously Presented) The electrophotographic photoconductor according to Claim 1, wherein the halogen-free solvent is at least one of cyclic ethers and aromatic hydrocarbons.

19. (Withdrawn- Previously Presented) A process for manufacturing a electrophotographic photoconductor, comprising:

applying a coating solution of a charge transport layer so as to form the charge transport layer above a charge generation layer, wherein the coating solution comprises a charge transport material and a halogen-free solvent which is at least one of cyclic ethers and aromatic hydrocarbons,

wherein the electrophotographic photoconductor comprises

an electroconductive substrate;

the charge generation layer; and

the charge transport layer, arranged in this order,

wherein the charge generation layer comprises:

a charge generation material in the form of particles having an average particle diameter smaller than a surface roughness of a plane where the charge generation layer is arranged ; and

a polyvinyl acetal resin having a ratio M_w/M_n of a weight-average molecular weight M_w to a number-average molecular weight M_n is 2.2 or more.

20. (Previously Presented) An image forming apparatus comprising:
an image forming unit which comprises,
an electrophotographic photoconductor,
a charging unit configured to charge the electrophotographic photoconductor,
a light-irradiating unit configured to irradiate the charged electrophotographic photoconductor with imagewise light so as to form a latent electrostatic image on the electrophotographic photoconductor,

a developing unit configured to develop the latent electrostatic image with a toner housed therein so as to form a toner image, and

a transferring unit configured to transfer the toner image to a recording material,

wherein the electrophotographic photoconductor comprises:

an electroconductive substrate;

a charge generation layer; and

a charge transport layer formed by using a halogen-free solvent, arranged in this order,

wherein the charge generation layer comprises:

a charge generation material in the form of particles having an average particle diameter smaller than a surface roughness of a plane where the electroconductive substrate is arranged; and

a polyvinyl acetal resin having a ratio M_w/M_n of a weight-average molecular weight M_w to a number-average molecular weight M_n is 2.2 or more; and

wherein the charge transport layer comprises polycarbonate having a triarylamine structure in at least one of principal chain and side chain thereof.

21. (Previously Presented) The image forming apparatus according to Claim 20, wherein the image forming apparatus comprises a plurality of image forming units.

22. (Previously Presented) The image forming apparatus according to Claim 20, wherein the light-irradiating unit is one of a light emitting diode and a semiconductor laser system.

23. (Previously Presented) The image forming apparatus according to Claim 20, wherein the charging unit is a contact charging unit.

24. (Previously Presented) The image forming apparatus according to Claim 20, wherein the charging unit is a non-contact charging unit.

25. (Previously Presented) The image forming apparatus according to Claim 24, wherein the charging unit comprises a charger in which the charger is disposed so as to form a gap between the charger and electrophotographic photoconductor being 200 μm or less.

26. (Previously Presented) The image forming apparatus according to Claim 20, wherein the charging unit is so configured as to apply a voltage superimposed with an alternating voltage.

27. (Currently Amended) A process cartridge for image forming apparatus, comprising:

an electrophotographic photoconductor; ~~and~~

~~at least one of:~~

a charging unit configured to charge the electrophotographic photoconductor;

a developing unit configured to develop a latent electrostatic image formed on the electrophotographic photoconductor with a toner so as to form a toner image;

a transferring unit configured to transfer the toner image to a recording material; and

a cleaning unit configured to remove the residual toner on the electrophotographic photoconductor after transferring the toner image,

wherein the process cartridge is detachably assembled to a main body of image forming apparatus, and

wherein the electrophotographic photoconductor comprises

an electroconductive substrate;

a charge generation layer; and

a charge transport layer formed by using a halogen-free solvent, arranged in this order,

wherein the charge generation layer comprises:

a charge generation material in the form of particles having an average particle diameter smaller than a surface roughness of a plane where the electroconductive substrate is arranged; and

a polyvinyl acetal resin having a ratio M_w/M_n of a weight-average molecular weight M_w to a number-average molecular weight M_n is 2.2 or more; and

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wherein the charge transport layer comprises polycarbonate having a
triarylamine structure in at least one of principal chain and side chain thereof.

BASIS FOR THE AMENDMENT

Claims 12 and 27 have been amended as supported by the priority document of this case and by the specification and claims as originally filed. See for example [0080] of the priority document.

No new matter is believed to have been added by entry of this amendment. Entry and favorable reconsideration are respectfully requested.

Upon entry of this amendment Claims 1-10 and 12-27 will now be active in this application. Claim 19 stands withdrawn from consideration.